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ABSTRACT

The purpose of this study was to determine if fitness, knowledge about health related fitness, and attitudes toward health related fitness could be improved as a result of a one-semester college health fitness course. A second purpose was to compare which of four methods of instruction would result in the greatest improvements in health related knowledge, fitness, and attitudes. The subjects were 147 students enrolled in four sections of a required health fitness course. All four sections used the same text, followed the same exercise laboratory procedures, and had the same course requirements. The only difference among the four groups was the methodology of presenting the cognitive material. Class 1 was given a lecture on the assigned chapter, followed by class discussion of key concepts with a question and answer session. Class 2 viewed a video cassette of a taped lecture on the assigned chapter. Class discussion lead by an instructor followed the viewing. The third class had the option of viewing the same taped lecture on their own time, but classroom time was spent in discussing the key concepts of the chapter and in answering questions on the material. Class 4 read the assigned chapter in the text outside of class and was given a study guide to follow. Classroom time with the instructor was spent in discussion and a question and answer session. All students were pretested on knowledge, fitness, and attitude. After fifteen weeks of treatment the tests were repeated. In regard to the first purpose of the study, the results revealed that statistically significant improvements occurred, especially amomg females. No significant difference was found in the results between the four methodologies of teaching used. (JD)

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"CHANGES IN KNOWLEDGE, FITNESS, AND ATTITUDE AS A RESULT OF A COLLEGE HEALTH FITNESS COURSE"

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Introduction

There are two parallel trends occuring in the United States today. First, there is an unprecedented interest in promoted health and fitness of individuals. This can perhaps best be seen in the first Surgeon General's Report on Health Promotion and Disease Prevention, Healthy People, published in 1979. A more specific document followed the Surgeon General's report titled, Promoting Health/Preventing Disease: Objectives for the Nation, published in the fall of 1980 where the health and fitness goals for the nation were established. A major aspect of the objectives for the nation was changing persons' life-styles through education.

A second parallel trend involves the tightening of budgets in educational institutions. Therefore, any educational program aimed at promoting health and fitness of individuals must be done as efficiently and as cost effective as possible.

With these two trends in mind, the purpose of this study was to determine if fitness, knowledge about health related fitness, and attitude towards health related fitness could be improved as a result of a one semester college health fitness course. With cost effectiveness in mind, a second purpose was to compare which of four methods of instruction would result in the greatest improvements, if any, to an individual.

The investigators chose to study knowledge, behavior, and attitude since knowledge alone without a concurrent behavior change does not produce health benefits since the benefits are the result of behavior and not knowledge alone. The investigators added the important parameter of attitude since a health fitness course may increase knowledge, may change behavior temporarily to cause an increase in fitness, but if the attitude toward health and fitness has not increased, the behavioral change may not be permanent (9, 10, 13).

SP 020 181

Numerous studies have been conducted comparing the effects of various teaching methods utilizing television on the development of knowledge (1, 3, 4, 5, 8, 11, 13, and 16). Not as many studies are reported relative to behavior and attitudinal changes. Two studies in physical education both reported no significant difference in attitude from a foundation's approach or a life-time's sports approach. In fact, decreases in attitude as a result of a general education physical education foundation course were observed by Kidd (6, 17).

Procedures. One hundred and forty-seven college students enrolled in their first semester at Oral Roberts University (spring 1980) served as subjects for this investigation. The subjects enrolled in one of four required health fitness sections and were unaware that the sections would be taught differently. The methodology for each section was randomly assigned. All four sections used the same text (2), followed the same exercise laboratory procedures, and had the same course requirements. The only difference among the four groups was the methodology of presenting the cognitive material.

Class 1 was given a lecture by one of the investigators (Jim Hoag), on the assigned chapter for 30 minutes. The lecture was followed by a 15 minute discussion of the key concepts and question and answer time over the material. The class then left the classroom and participated in a 45 minute exercise laboratory session.

Class 2 viewed, for approximately 30 minutes, a video cassette taped lecture by Dr. Paul Brynteson, author of the text, which covered the material in the required reading in the text. The classroom was equippped with video cassette player and two 19" monitors for viewing the taped lecture. Following the lecture, Jim Hoag led a discussion covering the key concepts for the chapter answering questions for approximately 15 minutes. The class then left the classroom and participated in a 45 minute exercise laboratory session.

The third class arrived at class having had the option of viewing the same taped lecture on their own time in the library. Students were given instructions for running the video cassette tape in the library and informed of the library hours. Classroom time was spent discussing the key concepts of the chapter and answering questions on the material. The discussion time was led by Jim Hoag after which the same exercise laboratory experience as Classes 1 and 2 was followed.

Class 4 read the assigned chapter in the text outside of class and was given a study guide to follow. Classroom time was spent with the investigator, Jim Hoag, leading a discussion covering the key concepts of the chapter and answering questions for 20 to 30 minutes. Each student then participated in the same exercise laboratory experience. The specific lecture and laboratory topics were as follows:

Week	Discussion Topic	Laboratory Exercises
1.	Medical Assessment	Medical Assessment
2.	Pre-test: Knowledge/Attitude	Pre-test: Field Test/Weight
3.	Life-style and Health	Warm-up/Jogging Form
4.	Concept of Health Fitness	Sample Fitness and Motor Ability Tests
5.	Cardiorespiratory Fitness I	Jogging Heart Rate
6.	Cardiorespiratory Fitness II	1 Mile at 60-70%
7.	Cardiorespiratory Fitness III	2 Miles at 60-70%
8.	Cardiorespiratory Fitness IV	2 Miles at 60-80%
9.	Test I (1/2 Post-test)	2 Mile Prediction
10.	Nutrition - Food Analysis	Swimming Heart Rate
11.	Nutrition - Weight Control	Interval Training
12.	Musculoskeletal Fitness I	Calesthenics/Isometrics
13.	Musculoskeletal Fitness II	Weight Training
14.	Injury Prevention and Treatment	Cycling and Rope Skipping HR
15.	Test II (1/2 Post-test); Attitude Post-test:	Field/Test Weight Post-test

All students were initially tested on knowledge, fitness, and attitude. After fifteen weeks of treatment the tests were repeated. Knowledge was initially measured by a 100 question, multiple choice test prepared by Brynteson and Cundiff, authors of the text. The test had been given and revised over the previous two years to more than 2000 students with each question being subjected to item analysis. The test was not discussed or returned to the students. Half of the post-test for knowledge was administered during the 9th week of the semester that covered the material discussed during the first half of the semester. The second half of the test was administered during the 15th week of the semester and covered the material discussed during the last half of the semester. Results on Test 1 and Test 2 were combined to give one total post-test score.

Fitness was evaluated by the students time on a running field test. Males ran 1.5 miles and females 1.25 miles on the ORU indoor jogging track which is 6 laps for a mile. The student's dry weight was also recorded.

Attitude toward exercise and physical activity was measured using the MacPherson-Yahosz Attitude to Exercise and Physical Activity (7). The instrument involved 50 statements to which the subjects responded on a Likert Scale of strongly disagree to strongly agree.

Results and Discussion. To test the primary purpose of the study a t test was applied to each group separately for each variable. Additionally, the groups were analyzed by males alone, females alone, males and females combined, and then all four groups combined.

To test the second purpose of the study, analysis of variance was applied to the change in each variable for each group once again analyzing males separately, females separately, and then males and females combined. The results appear in Tables I through VI.

In regards to the first purpose of the study, to determine if knowledge, fitness, and attitude could be improved as a result of a one semester health fitness program; the results revealed that statistically significant improvements occured in all three variables when the classes, males, females were combined. The total groups improvement in knowledge from 58 to 82, field test time from 11.8 to 10.8 minutes, and attitude from 200 to 206 were all significant beyond the .01 level of confidence. Only the weight parameter did not show a statistically significant change.

When the four classes, males, and females were all analyzed separately, the results were consistent with the total groups changes. The only exception was in attitude. The females showed a significant improvement in attitude while the males did not. When the males and females were combined, however, the change was statistically significant.

The results of this study differ from that of Kidd where he found at the conclusion of a physical education foundations course that behavior and attitude decreased (6). There may be several possible explanations for the difference. First and foremost, is the total environment the students are exposed to at ORU. The philosophy of the University promotes excellence in the development of the whole person, mind, body, and spirit. This philosophy permeates both the social and academic curriculums resulting in a positive attitude toward being fit not only mentally and spiritually, but also physically. As a result, attitude and fitness have a very good opportunity to be improved.

The second reason these results may differ from Kidd's is that this health fitness course has been carefully organized with essential key concepts on health and fitness presented. The course has an instructor actively leading the exercise laboratory sessions and the sessions emphasize progressive and various exercise routines that can result in the students developing a fitness orientated life-style.

In regards to the second purpose of this study, to determine if there was a significant difference among the four methodologies of teaching health fitness concepts, the analysis of variance statistics revealed that there was no significant difference in any of the variables analyzed. Therefore, there was no difference in the four methodologies of teaching in knowledge, fitness, and attitude and all 4 groups improved regardless of the methodology used to present the knowledge. Other studies report various finds as to the best approach. No one approach seems to be the best - perhaps it is more a function of the teacher than the approach.

Since no methodology of knowledge presentation was statistically significantly better than the other, and since fitness and attitude showed improvement to the same degree in all groups, the most cost efficient methodology of presenting the knowledge should be enacted. Since considerable cost is involved in both television production and faculty time in lecture preparation, the most cost effective means would be to give the students the study guide and have them read the text on their own time with class time spent on discussion of the material.

Perhaps the most important part of the entire course is not the methodology of presenting the knowledge, but the exercise laboratory experiences. Since the laboratory experiences were common to all four groups, and the laboratories placed emphasis on instructor leadership and student-directed behavior modification, this may be the most important aspect of the entire course. The cliche that "attitudes are more caught than taught" may be the most important part of any fitness course.

Conclusions. On the basis of the data, the following conclusions were formulated relative to the two purposes of the study:

1. Knowledge, fitness, and attitude toward exercise and physical activity all significantly improved as a result of a one semester health fitness course.

2. There was no significant difference in the knowledge, fitness or attitude changes among any of the four teaching methodologies.

Subscript. In the spring semester of 1981, one of the investigators, Sally Schollmeier, replicated the above study. She studied 139 subjects and while the means, t ratios and F ratios varied, the basic results were identical to this study.

REFERENCES

(1) Chu, Godwin, Wilbur Schramm. "Learning from Television: What the Research Says." Washington, D.C. National Association of Broadcasters, 1968.

(2) Cundiff, David E., and Paul Brynteson. Health Fitness: Guide to A Lifestyle. Iowa: Kendall-Hunt Publishing Company, 1979.

(3) Gabriel, Ofiesh D., Wesley C. Meierhenry. "Papers From the First Annual Convention of the National Society for Programmed Instruction." Trends in Programmed Instruction, National Education Association, 1964.

(4) Hixson, Chalmer G. "Status and Potential of Instructional Television for Physical Education." Journal of Health Physical Education and Recreation, 33:25-27, March-June, 1962.

(5) Jamison, Dean, Patrick Suppes, and Stuart Wells. "The Effectiveness of Alternative Instructional Media: A Survey." Review of Educational Research. 44:1-67, Winter, 1974.

(6) Kidd, Thomas. "An Evaluation of a Foundations of Physical Activity Course." Research Quarterly, 42:35-41, March 1971.

(7) McPherson, B.D., and M.S. Yuhansz, "An Inventory for Assessing Men's Attitudes Toward Exercise and Physical Activity." Research Quarterly, 39:218-219, March, 1968.

(8) Merne, John W., Thomas E. Hannum, John E. Klingersmith, and Dennis Nord. "Use of Taped Lectures to Replace Class Attendance." AudioVisual Communication Review, 17:42-46, Spring, 1969.

(9) Oxedine, Joseph B. Psychology of Motor Learning. New York: Appleton-Century-Crofts, 1968.

(10) Perkins, Hugh V. Human Development and Learning. Calif.: Wadsworth Publishing Co., Inc., 1969.

(11) Popham, W.J. "Tape Recorded Lectures in College Classroom II." AudioVisual Communication Review, 10:94-101, 1962.

(12) Ritchey, Elizabeth. "Attitude Changes Following Three Different Modes of Instruction in College Level Personal Health Courses." Abstracts, AAHPER National Convention, 1980, p. 124.

(13) Schramm, Wilbur. "What the Research Says." Quality in Instructional Television, Hawaii, Honolulu, 1972.

(14) Travers, John F. Learning: Analysis and Application. New York: David McKay Co., Inc., 1965.

(15) Watts, Parris. "Comparison of Three Human Sexuality Teaching Methods Used in University Health Classes." Research Quarterly, 48:187-190, March, 1977.

(16) Whittich, Walter A., Charles F. Schuller. Instructional Technology, New York: Harper and Row Publishers, 1973.

(17) Zaichkowsky, Linda. "Attitudinal Differences in Two Types of Physical Education Programs." Research Quarterly, 46:364-70, October, 1975.

TABLE I

CHANGES FROM TEST I TO TEST II FOR FEMALES

Variable	Class	Mean T_1	Mean T_2	Diff	t	Level of Confidence
Knowledge	1	54	81	27	8.74	.01*
	2	56	80	24	15.23	.01*
	3	61	83	22	11.86	.01*
	4	60	80	20	6.36	.01*
	Mean	58	81	23	19.01	.01*
Field Test (Minutes)	1	11.8	10.8	-1.0	5.16	.01*
	2	12.0	10.9	-1.1	3.27	.01*
	3	11.9	10.7	-1.2	2.92	.01*
	4	11.5	10.6	-.9	2.31	.05*
	Mean	11.8	10.8	-1.0	6.89	.01*
Weight (Lbs)	1	139.5	138.3	-1.2	.54	.60
	2	129.3	128.7	-.6	.36	.72
	3	125.4	127.2	1.8	1.86	.08
	4	142.7	142.5	-.2	.09	.93
	Mean	133.5	133.3	-.2	.99	.33
Attitude	1	205	210	5	1.13	.27
	2	200	206	6	2.66	.01*
	3	203	208	5	1.30	.21
	4	192	201	9	1.81	.12
	Mean	201	207	6	2.31	.02

* Represents a significant difference.

TABLE II

CHANGES FROM TEST I TO TEST II FOR MALES

Variable	Class	Mean T_1	Mean T_2	Diff	t	Level of Confidence
Knowledge	1	55	80	25	8.75	.01*
	2	56	86	30	7.31	.01*
	3	59	81	22	10.60	.01*
	4	65	84	19	7.88	.01*
	Mean	58	82	24	15.90	.01*
Field Test (Minutes)	1	11.9	10.7	-1.2	5.46	.01*
	2	11.7	10.6	-1.1	2.58	.03*
	3	11.0	10.2	-.8	4.49	.01*
	4	12.0	11.1	-.9	2.49	.04*
	Mean	11.7	10.7	-1.0	7.48	.01*
Weight (Lbs)	1	180.2	178.2	-2.0	.92	.37
	2	179.7	175.8	-3.9	1.05	.32
	3	170.8	169.9	-.9	.26	.80
	4	184.8	184.6	0.2	.07	.94
	Mean	176.1	174.3	-1.8	1.35	.18
Attitude	1	194	202	8	1.17	.26
	2	205	210	5	.57	.58
	3	203	207	4	1.17	.25
	4	197	195	-2	.48	.65
	Mean	200	205	5	1.52	.13

* Represents a significant difference.

TABLE III

CHANGES FROM TEST I TO TEST II MALES AND FEMALES COMBINED

Variable	Class	Mean T_1	Mean T_2	Diff	t	Level of Confidence
Knowledge	1	54	81	26	11.97	.01*
	2	56	82	26	15.25	.01*
	3	60	82	22	16.04	.01*
	4	62	82	20	9.42	.01*
	Mean	58	82	24	24.87	.01*
Field Test (Minutes)	1	11.8	10.8	-1.0	7.31	.01*
	2	11.9	10.8	-1.1	4.23	.01*
	3	11.4	10.5	-.9	4.99	.01*
	4	11.8	10.9	-.9	3.37	.01*
	Mean	11.8	10.8	-1.0	9.84	.01*
Weight (Lbs)	1	154.5	153.1	-1.4	.17	.86
	2	147.6	145.9	-1.7	.62	.53
	3	142.1	142.3	.2	.76	.45
	4	158.7	158.5	-.2	.12	.91
	Mean	150.6	149.5	-1.1	.92	.37
Attitude	1	200	206	6	1.63	.11
	2	202	208	6	1.82	.07
	3	203	208	5	1.54	.13
	4	194	198	4	1.16	.26
	Mean	200	206	6	2.76	.01*

*Represents a significant difference.

TABLE IV

ANALYSIS OF VARIANCE COMPARING THE SIGNIFICANCE OF THE DIFFERENCES FROM TEST I TO TEST II FOR FEMALES

Variable	Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squared	F Ratio	Level of Confidence
Knowledge	Treatment	74	465.49	155.16	1.35	26
	Error		7941.38	115.09		
	Total		8406.87			
Weight	Treatment	62	22.85	7.62	.08	96
	Error		5220.16	91.58		
	Total		5243.01			
Field Test	Treatment	69	1.87	.60	.41	75
	Error		96.08	1.48		
	Total		97.89			
Attitude	Treatment	61	1707.05	569.02	.58	63
	Error		54614.55	975.26		
	Total		56321.60			

TABLE V

ANALYSIS OF VARIANCE COMPARING THE SIGNIFICANCE OF THE DIFFERENCES FROM TEST I TO TEST II FOR MALES

Variable	Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squared	F Ratio	Level of Confidence
Knowledge	Treatment	46	617.67	205.89	2.02	.12
	Error		4597.10	102.16		
	Total		5214.78			
Weight	Treatment	43	84.74	28.25	.43	.73
	Error		2782.42	66.25		
	Total		2867.16			
Field Test	Treatment	44	.91	.31	.34	.79
	Error		38.51	.89		
	Total		39.42			
Attitude	Treatment	43	538.21	179.40	.45	.72
	Error		16724.74	398.21		
	Total		17262.956			

TABLE VI

ANALYSIS OF VARIANCE COMPARING THE SIGNIFICANCE OF THE DIFFERENCES FROM TEST I TO TEST II FOR COMBINED MALES AND FEMALES

Variable	Source of Variation	Degrees of Freedom	Sum of Squares	Mean Squared	F Ratio	Level of Confidence
Knowledge	Treatment	121	840.71	210.18	1.92	.11
	Error		12784.89	109.27		
	Total		13625.61			
Weight	Treatment	106	2.12	.53	.44	.78
	Error		135.19	1.22		
	Total		137.31			
Field Test	Treatment	114	251.97	62.99	.8	.53
	Error		8059.02	79.01		
	Total		8310.99			
Attitude	Treatment	105	1278.23	319.55	.44	.78
	Error		72908.404	721.86		
	Total		74186.64			